Spring 5-19-2018

The Efficacy of Dance/Movement Therapy for Trauma Affected Youth: A Literature Review

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Abstract

As the quantity of trauma affected children rises so does the need for effective treatment interventions to resolve trauma symptomology so children may resume successful development. Up until now, the most popular interventions to aid children who have experienced trauma, have been "top down approaches" such as cognitive behavioral therapy (CBT). Top down approaches focus on processing and altering thought content to alleviate symptoms of trauma. However, recent research indicates that top down approaches do not relieve the somatic and biological symptoms of trauma that account for a majority of trauma symptomatology. The research of Duros & Crowley (2014) suggests that utilizing bottom up interventions that regulate the physical symptoms of trauma should be the first step in trauma treatment. Homann (2010) suggest that integrating the body into treatment for those who have experienced trauma can synchronize the endocrine system to inhibit proper functioning and with a balanced system, trauma affected clients can delve into cognitive processing. The findings of this literature review revealed that dance/movement therapy techniques such as body scanning, mirroring and body based coping skills may be efficacious interventions for children who have experienced trauma however further research is needed to qualify the efficacy of these methods. Body based techniques such as dance/movement therapy and would likely be most effective if paired with a top down method such as cognitive behavioral therapy.

Introduction

The Substance Abuse and Mental Health Services Administration (SAMHSA) of the U.S. Department of Health and Human Services reports that the prevalence of trauma experienced by children is on the rise. A 2012 study conducted by the National Center for Mental Health Promotion and Youth Violence Prevention reports that 60% of adults report experiencing abuse in their childhood. SAMHSA warns that as the number of traumatic experiences a person ensures increases so dose their risk of an extensive list of mental and physical ailments including high stress, relationship difficulties and financial distresses. As trauma is on the rise, the health and success of young American's is at risk. As the health and success of the children in the United States decreases so does the relational, physical, financial and economical health of our country as a whole. The purpose of this literature review is to critically analyze the current literature of therapeutic interventions for traumatized children and to investigate effectiveness of body-based interventions for trauma exposed children, specifically dance/movement therapy.

Trauma is defined by the Merriam-Webster dictionary (1997) as "a bodily or mental injury caused by an external object" (p. 770). At my internship site, The Boston Center, a partial hospitalization program in Boston, we have seen an increasing number of traumatized children and an overwhelming diagnosis of PTSD. The National Center for PTSD defines PTSD as, "a mental health problem that some people develop after experiencing or witnessing a life-threatening event, like combat, a natural disaster, a car accident, or sexual assault" (U.S. Department of Veterans Affairs, 2017). The symptoms of pediatric PTSD include emotional numbing, irritability, extreme emotional responses, hyper vigilance, irregular sleep hygiene and difficulty with concentrate and cognition (Van Der Kolk, 2003). For the purpose of examining

the various ways and degrees that stress can impact the brain, I will be reviewing research studies of adults, children and animals diagnosed with PTSD.

In *The Body Keeps the Score*, Bessel Van Der Kolk specifies that trauma can cause brain circuits to reroute, the thalamus to shut down, the prefrontal cortex to be compromised by an over active limbic brain and the amygdala to be hyper-vigilance, causing nervous systems secrete a continual flow of stress hormones into the blood stream (Van Der Kolk, 2014). Due to the high prevalence of trauma present in children and adolescents, there has been a growing body of research (Duros & Crowley, 2014, Cook et al., 2015, Dorsey et al., 2017) regarding the development of the most successful therapeutic interventions for trauma-affected youth. The majority of the interventions being research for treatment of traumatized children are based in cognitive behavioral therapy (CBT) approaches, also known as a "top down approach". Cognitive behavioral therapy is a form of talk therapy that aims to flesh out one's thought process, identify distorted beliefs and create healthier thought patterns. Though research has attested that CBT is an effective therapeutic technique for trauma affected individuals, there has been a lack of research for alternative interventions to support this population. Though there has been a shortage of research, mind-body therapeutic interventions, also known as "bottom up approaches" had been shown to be efficacious in treating trauma symptomology (Duros & Crowley, 2014). Bottom up approaches seek to regulate systems of the body that have been altered by a trauma, for example relaxing and overactive sympathetic nervous system (Dorsey et al., 2017). Bottom up approaches include mindfulness; body based coping skill and dance/movement therapy. Throughout this review I will present and discuss the current research on the most efficacious forms of therapy for children who have experienced trauma and identify

the opportunities for regulation that bottom up methods, specifically dance/movement therapy offer and how they can be used in conjunction with top down methods such as CBT.

Trauma

The understanding of what trauma is and how it affects individuals has grown exponentially since the concept of "trauma" first was introduced after World War II. Following World War II, Veterans who returned home with trauma symptoms were often noted as having "soldier's heart" or suffering from "nostalgia". When trauma responses were seen in war, they were seen as a "moral weakness" (National Center for Trauma Informed Care, 2014, p. 288). In 1980, trauma was recognized as significant mental aliment when the diagnosis of Post Traumatic Stress Disorder was added to the publication of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM-III). A prevalence study conducted by The National Comorbidity Survey Replication in 2003 indicated that PTSD affects 6.8% of American adults and 5% of American children, with women being twice as likely than man to experience PTSD (National Center for PTSD).

Cook et al., (2005) identifies that children that have experienced trauma suffer from a multitude of symptoms on a biological, social, behavioral and physical level, including attachment and cognition difficulties, poor behavioral control, affect regulation and self-concept. The effects of witnessing or experiencing traumatic events at a young age significantly impact an individual. It has been argued that trauma witnessed or experienced as a child has a graver impact on that individual who is fully developed as it disrupts a person's natural development (Van Der Kolk, 2003). Trauma can cause impairments in cognitive development including visual motor perception, decision-making, processing and information retention (Bellis, Hooper, Wooley & Shenk, 2010). Trauma exposure may also impair social-relational and emotional

development causing deficits in interpersonal relations, affect regulation, behavioral control, positive self-concept and appropriate attachment (Cook et al., 2005). Both the nature of the trauma experienced and developmental stage of the child contribute to how the child's trauma response will manifest and present symptomatically (Van Der Kolk, 2003).

The Effect of Trauma on The Brain

In the realm of trauma informed psychology, there is growing research supporting the specific, significant and lasting effects of trauma on the brain and body. The findings of Karl et al., (2006) suggest that abnormalities in frontal-limbic system structures are associated with experiencing trauma. The amygdala, thalamus, hippocampus are a part of the limbic system and are the primary areas of the brain that are active and affected during a stress response along with the prefrontal cortex. Defects in frontal-limbic system can result in impaired emotion regulation, processing ability, capability to relate to others, memory retrieval and instinct interpretation. These areas of the brain cannot only be adversely affected by chronic stress but have the potential to be permanently altered (Bremner, 2006, Schaefer, Malta, Dorfel, Rohleder & Werner, 2006, Weniger, Lange, Sachsse & Irle, 2008). Karl et al., (2006) asserts that the gravity of the brain impairment is dependent on the severity of the trauma experienced.

The ventromedial prefrontal cortex (vmPFC) and the amygdala are two structures in the brain that are specifically important in stress response. The vmPFC is located at the bottom central hemisphere of the frontal lobe and is vital in the processing of emotions, meditating fears, and making decisions. Similarly, the amygdala processes emotions but also controls aggression and stores memories of events, emotions experienced, conditioned fear and startle responses and the acquisition of new endocrine responses. The vmPFC and amygdala work together to regulate emotions and develop appropriate responses to stimuli (Koenigs & Grafman 2009). The meta-

analyses of fifteen functional imaging studies conducted by Koenigs & Grafman (2009) suggests that when a person experiences trauma their vmPFC does not perform adequately and is hypoactive, the relaxed state of the vmPFC causes the amygdala to overcompensate and become hyperactive. The hyper-function of the amygdala instigates an excessively vigilant trauma response, which is seen in common PTSD symptoms such as a high startle response, heightened anxiety and unsettledness (National Center for PTSD, 2007). The function of the amygdala is so intertwined with the symptoms of PTSD that Koenigs & Grafman (2009) found that damage to the amygdala inhibited the development of PTSD among combat veterans; concluding that the symptoms of PTSD cannot be experienced without a properly functioning amygdala. "Amygdala damage could confer resistance to PTSD through impairment in threat detection, fear expression, and/or emotional memory enhancement" Koenigs & Grafman (2009).

Another part of the brain that is gravely affected by trauma is the hippocampus. The Hippocampus is a part of the brain that is involved with verbal declarative memory (Bremner, 2006). Several studies indicate that PTSD is associated with smaller hippocampus size, impaired cognitive functioning and memory (Weniger, Lange, Sachsse, & Irle, 2008, Karl et al., 2008). The research of Weniger et al., (2009) revealed that the size of the amygdala and hippocampus in individuals with PTSD and those who had experienced trauma without a diagnosis of PTSD was decreased though those with a diagnosis of PTSD had slightly smaller amygdala and hippocampus volumes compare to those who experienced trauma without a PTSD diagnosis. The key difference between the groups was cognition. The score of the group who has experienced trauma indicated that they had normal cognition while the group diagnosed with PTSD had significantly impaired cognition. The research of Bremner (2006) focused combat related PTSD yielded similar results, concluding that the hippocampal volume depended on the severity of the

combat experiences of the veterans with PTSD. These studies indicate that a moderate amount of trauma may cause lasting changes in the brain however the severity of the trauma depends on how the brain is affected.

Trauma and The Developing Brain

Research clearly indicates significant and lasting effects of trauma on brain volume and ability. However, a question worth further investigation is how does trauma effect a developing brain? According to a survey by Substance Abuse and Mental Health Services Administration sector of the U.S. Department of Health and Human Services, young children exposed to five or more significant adverse experiences in the first three years of childhood face a 76% likelihood of having one or more delays in their language, emotional or brain development (2011). Karl et al., (2006) found significant differences in multiple areas of the brain for children who have experienced PTSD but found no difference in hippocampal volume. It is thought that the decrease in hippocampal volumetric volume is not detected until adulthood however children with PTSD have a significantly smaller corpus callosum and frontal lobe volumes compared to children who do not have PTSD (Karl et al., 2006). Bremner (2006) found that patients with PTSD had deficits in verbal declarative memory as well as increased amounts of cortisol and norepinephrine when confronted with stress. Likewise, research by Van Der Kolk (2003) found that high levels of glucocorticoids seen with stress were also associated with learning deficits.

Current Treatment Interventions for Trauma

The first generation of trauma treatment was developed in the 1980's was focused on individual interventions to decrease the person's symptoms of PTSD. The focus toward symptomology shed a light on the various areas of a person's brain that were affected by PTSD. The second generation of trauma healing used an empowerment-focused framework to instill

healing. The empowerment models were used to look within oneself for dealing and the connections with others diagnosed with PTSD helped provide support (National Center for Trauma Informed Care, 2014). This second phase has inspired group trauma based therapy, which is widely used today. Cook et al., (2015) suggests group therapy focused on interpersonal connection, developing understanding of oneself and skill development is the most beneficial intervention format for adolescents recovering from trauma exposure.

We are currently in the third generation of Trauma Healing: Trauma informed care. Trauma informed care is a person-centered approach to healing that seeks to treat the person as a whole. Trauma informed care is focused on the various aspect of a person and how trauma affects the person on a biological, psychological, neurological, and social level (U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, 2014).

Due to the compromised brain activity of individuals who have experienced trauma, Bessel Van Der Kolk (2014) suggests that practitioners combine, "top down approaches (to activate social engagement) with bottom-up methods (to calm the physical tension in the body)" (p. 88). A top down is focused on changing what or how a person is thinking. It is thought that the changing the one's thought processes will positive effect on their emotions and alleviate the somatic and physiological symptoms of trauma. An example of a top down approach would be Cognitive Behavioral Therapy. The top down approach is the most widely used method of therapy for trauma populations (Van Der Kolk, 2014). Multiple studies have shown the effectiveness of top down approaches, including Dorsey et al., (2017) who identified the most successful therapeutic intervention for children and adolescents who have experienced trauma was individual and group-based CBT.

The counterpart to top down interventions is bottom up interventions. Bottom up methods start with the body, the philosophy of bottom up methods are that physical relaxation in the body will have a direct effect on emotions and then thoughts. The goals of bottom up methods are to bring a sense of ease to the biological systems in the body to allow proper physical regulation, which is needed for emotional and behavioral regulation (Van Der Kolk, 2014). Examples of bottom up approaches include mind-body integrative techniques such as body-based coping skills, self-soothing exercises, yoga therapy and dance/movement therapy. Bottom up methods have not received the amount of attention or research as the top down method. In research of the most efficacious interventions for trauma-affected youth, mind-body coping skills were considered "possibly efficacious" and "experimental" as there was not adequate amount of research to support the effects of mind-body approaches compared to cognitive behavioral therapy (Dorsey et al., 2017). However, the majority of the research about bottom up methods as treatment for trauma exposed populations has shown significant improvements in somatic symptomology and the development of self knowledge (Cook et al., 2005, Rainbow Tin Hung Ho 2015, Harris 2007, (Rizzolatti & Craighero, 2004 & Mcgarry & Russo, 2011).

Body/Mind Integration in Trauma Treatment

Due to the significant changes made to the brain as a result of experiencing trauma, it is not a surprise that bottom up interventions focused on bodily regulation can alleviate trauma response symptoms. As Homann (2010) notes, "physiologically, sensory awareness approaches initiate a down-regulation of the nervous system" (p. 23). Along with the regulation of parasympathetic and central nervous systems, movement can also initiate emotional processing to bring greater awareness to one's emotional experience. The somatosensory cortex is the area of the brain that receives neuronal information from each part of the body is and responsible for

processing movement. This area works with the limbic system, specifically the hippocampus and the amygdala to interpret the emotional and affective value of the physical sensations experiences Homann (2010). “Thus, emotional processing is first linked to the body’s response to the environment” (Homann, 2010, p. 83). Therefore, movement is the first of many neurological processes needed to identify the relevancy, meaning and complexity of one’s emotional experience. Research by Homann (2010), Duros & Crowley (2014) and Pierce (2014) supports the idea that body based interventions are best used when informed by the findings of neuroscience to consciously target the area’s in the brain that are impaired by trauma and to create fluid connection and pathways. The principles of dance/movement techniques are built upon the findings of neuroscience and relational theory to enable a fluid relationship between the client, their body, emotions, thoughts, experiences and relation to others.

Efficacy of Dance/Movement Therapy

Dance/movement therapy is defined by the American Dance Therapy Association as, “the psychotherapeutic use of movement to promote emotional, social, cognitive, and physical integration of the individual, for the purpose of improving health and well-being” (ADTA, 2014). The principles of dance/movement therapy are based on the ideas that the mind, body and spirit are interconnection and that movement is a human’s foundational system of communication. Movement communicates just as much, if not more than our verbal communication and emotions are not only felt but also held in the body, therefore the integration of the body in therapy is imperative for optimal mental health functioning (Gelder, 2006). While dance/movement therapy has gain recent recognition for its proficiencies in mind-body integration, limited research has been done that confirms the success of DMT interventions on various populations, included trauma-affected children.

Dance/Movement Therapy and Trauma

In the research that has been done how dance/movement therapy affects individuals who have experienced trauma, dance/movement therapy has shown to be a supportive approach to process and alleviate symptoms associated with trauma. The physical nature of dance/movement therapy makes DMT a bottom up treatment method, which allows the body to become physically relaxed and for bodily processes to regulate. Duros & Crowley (2014) argues that bottom up approaches are the most beneficial for trauma treatment as, "…they seek to balance the biochemistry of the brain, to stimulate the endocrine system to create rest, recovery, relaxation, and to dissolve the reasons why one believes the troubling messages in their brain" Duros & Crowley, 2014, p. 245 & 246). As a bottom up approach, the techniques of dance/movement therapy not only focus on balancing the central nervous system but also aid in the development of emotional understanding, the cultivation of empathy, the repair of insecure attachment tendencies and an increase in self knowledge, all while engaging cognitive, physical and emotional processes (Betty, 2013, Hung Ho, 2015, Harris 2007). Dance/movement therapy seeks to meet these goals through the utilization of a variety of techniques including body scanning, mirroring and acquiring body based coping skills and self-soothing strategies.

Trauma Informed Dance/Movement Therapy

The adaption of trauma informed care is imperative in all interventions geared toward serving a trauma affected population (Dorsey et al, 2017). The theoretical framework of Betty (2013) combines trauma informed care with mind body integration in a four-phase DMT intervention geared to support emotional regulation for children aged three to thirteen in residential treatment centers. The first phase is to establish safety, the second phase is to improve emotional awareness, the third is to develop internal emotional coping and the last phase is

external expression management. Better (2013 stresses that the most important of these four phases is safety, as it is the first phase that must be successfully completed before any other treatment can occur.

Betty (2013) notes that safety is essential to establish at the start of treatment as trauma exposed children are at a heightened physiological state. In this state, their body and mind are unconsciously processing sensory information to assess danger in their environment. When a person deems that they are safe, their physiological stress response can be at ease which allows social behavior to flourish. However, if the person detects danger "defensive strategies such as fighting, fleeing, faint or freezing are recruited" (p. 46). Perry (1995) notes that when a children are in a state of fear, alarm or terror their attention is primarily focused on other's voice, body postures and facial expressions. Therefore, Betty (2013) recommends that adults working with children who have experienced trauma have consistent affect and open, nonthreatening body postures.

Establishing safety in a group will look different based on what the group members need to feel comfortable. A trauma-based intervention conducted by David Alan Harris (2007) with former boy soldiers aged 15-18 in Sierra Leone established safety through ritual. Ritual was important for this group of individuals as body-based rituals were a part of the Sierra Leone culture to create unity and to express oneself with in a group. Therefore, safety was manifested through beginning and ending each session with a movement game or check in. Harris (2007) created structure in the group by having an established theme each day such as "unity" or "forgiveness". The group maintained both ritual and structure through utilizing specific movement actives each day and doing the activity with the theme of the day in mind. Some reoccurring activities included a circle dance and role-play to act out war situations. It is thought

that the familiar protocol of each day made it easier to the participants to participate as they knew what to expect and did not have to spend time or energy anticipating change or danger. At the end of the treatment, participants' self reported an overall decrease in "aggressive behavior, depression, anxiety, intrusive recollections and elevated arousal" (Harris, 2007, p. 227).

Dance/Movement Therapy: A Pro-Social Approach

Interventions geared toward trauma-exposed children should not only be trauma informed but also conversant in natural coping tendencies of children. Current research surrounding children's coping capabilities suggest that there are three mechanisms: pro-social, anti-social and asocial (Moreland & Dumas, 2008). The most affective of the three is pro-social, a child utilizing a pro-social approach would utilize their own resources or reach out for help overcome their difficulty in a constructive manner (Moreland & Dumas, 2008). Dance/movement therapy groups with peers of similar ages that have experience trauma operate pro-socially. Dance/movement therapy conducted in a group setting offers safe social space for children to engage with each other while also developing their own autonomy within a group. Cook et al., (2005) notes that the progression of group process is specifically beneficial for adolescents as groups can to provide social support, decrease stigmatization and normalize the experience of the group members. In group based treatment, participants are offered the opportunity to explore themselves individually and as a collective whole. Rainbow Tin Hung Ho (2015) sought to see if a group based dance/movement therapy program could help those who have experienced sexual trauma better understand their experience. The DMT intervention utilized creative dance done individually and as a group as well as group movement games. Participants were invited to engage in improvisational movement to explore their personal movement preferences, the boundaries of their body and to develop a sense of security and connectedness to the self and

others. At the end of their 5-week sessions, participants noted that they felt that they found their "inner rhythm and space", had developed an increased awareness of personal boundaries and had an enhanced understanding of relationships (Hung Ho, 2015).

While adolescents greatly benefit from group-based therapy, trauma affected infants and elementary aged children benefit the most from treatment focused mending inapt attachment through reestablishing the caregiver and child dyad. One to one dance/movement therapy can provide the environment for the therapist to aid the child in their process of repairing insecure attachment. "When an infant experiences early attachment ruptures, the basic organization of the brain and functioning of the autonomic nervous system can be disrupted through ongoing psychophysiological stress" (Homann, 2010, p. 89). The dance/movement therapy technique of mirroring, which will be expanded upon in subsequent sections of this review, can be beneficial in fostering healthy attachment and attunement (Homann, 2010).

Dance/Movement Therapy Interventions for Trauma Affected Youth

Though mind-body approaches can be beneficial for most trauma-affected individuals, integrating the mind and body is specifically helpful for children who have experienced trauma. When conducting any type of intervention, especially one that involves the body, it is partially important for the interventions to be conducted in a trauma informed manner to allow the clients to feel comfortable and safe. Furthermore, research has shown that therapeutic techniques that follow a pro-social format in a group or dyad are particularly efficacious (Cook et al., 2005, Homann, 2010, Hung Ho, 2015, Moreland & Dumas, 2008). In subsequent sections, I will analyze the specific dance/movement therapy techniques that Bellis et al., (2010), Homann (2010), Mcgarry & Russo (2011), Rizzolatti & Craighero (2004) & Seoane (2016) have presented as efficacious methods to help trauma affected children notice their somatic

experiences, adapt physical regulation in their bodies and that can increase their ability to emphasize, communicate and relate to others.

Mirroring

The results of research conducted by Bellis et al., (2010) indicate that children who suffer with PTSD have lower visual memory performance and that treatment focused on enhancing visual memory may help alleviate some symptoms of PTSD. A Dance/Movement therapy technique that involves the activation of the visual memory to create empathic understanding is called Mirroring. Mirroring is a technique that involves duplicating the movement qualities of another person, as one person moves, the other person watches and does their movements simultaneously, resulting in a reflection the movers movement. This process is usually done with a therapist and a client or a client and a group. The purpose of mirroring is to "enhance emotional understanding between a therapist and client or among members of a group" (Rizzolatti & Craighero, 2004, p. 1). The process of mirroring has been shown to increase the activation of mirror neurons in the brain. Mirror neurons are used to learn how to imitate movement and how to perceive the intention of movement (Rizzolatti & Craighero, 2004). The technique of mirroring has been widely used in Dance/Movement Therapy due to the neurological underpinning that an increased use of mirror neuron circuitry enhances one's capacity to understand the emotional intention of others (Mcgarry & Russo, 2011).

The technique of mirroring has been used in a variety of dance/movement Therapy inventions for children that have faced trauma and has proven to be an effective way for children to develop a sense of attunement and empathy towards others (Mcgarry & Russo, 2011).

Body Scan

Since a trauma-exposed individual regularly operates in a heightened state of stress, the

first aspect of attaining regulation is for them to notice what is happening within their body. Every person's symptoms will manifest in a different way, some will experience rapid heartbeat, others may notice an aching pain throughout their body while another person may experience severe migraines and gastrointestinal issues at the first sign of stress. A study by Langmuir, Kirsh & Classen (2012) sought to determine is body oriented psychotherapy would be advantageous for individuals who were abused in childhood. Langmuir et al., (2012) found that participants gained a greater awareness of their bodies after the duration of treatment and were therefore able to detect physical symptoms more effectively. Dance/movement therapy implores the use of a therapist lead body- scan to enable a person to detect pain; discomfort and abnormalities that they may have accepted as their baseline state of being and no longer notice. The body scan can "support the organization of perception, arousal, and regulation at its psychobiological foundation" (Homann, 2010, p. 83), which is ideal of trauma affected individuals who face difficulty identifying and organizing thoughts, sensations and emotions. The body scan typically begins in a silent meditative state. The client is invited to bring consciousness to the top of their head, noticing any feelings, tension or sensations that are felt in that area at that time. Clients are then guided through the same meditative process throughout their entire body. In a body scan, the client is offered the time and space to place their attention on each body part cascading from the head down to the feet. After completing the body scan, clients are invited to open up to their therapist, fellow group members or a journal to illustrate their experience. A meditation based body scan can create a relaxed, safe and held environment for the client to experience their body. Homann (2010) argues that body-sensing activities, such as a body scan, offer the opportunity for positive body experiences to occur. The client purposely takes time to listen to their body, notice each part and then be informed by their experience to

identify what needs to occur for their body to feel regulated or "good". Such an intense relational experience with the body may be very difficult for those who have had an early attachment rupture, have experienced trauma to their body or have a challenging relationship with the body. In this scenario, the client would benefit from the support of the therapist to process what arose from their experience in a safe environment.

Body Based Coping Skills

As central nervous system regulation is the primary proponent to easing the somatic symptoms of trauma, specifically PTSD, body based coping skills can be of the most beneficial techniques for children. The findings of Langmuir et al., (2012) suggest that when individuals are aware of physical sensations in their body and consider those sensations as information of their mental experience, they are more receptive toward soothing themselves. Participants in Langmuir et al., (2012) sought to alleviate symptoms their physical symptoms of anxiety and depression through their preferred self soothing strategies as a coping skill (Langmuir et al., 2012). The acquisition of grounding exercises and body based coping skills can provide a child with their own resources that they can choose to implement when they wish to, with or without the help of another person. The knowledge of body-based coping skills is specifically helpful for children who may not have the support of a guardian readily available.

While providing a physical stimulus for regulation, self-touch also can deepen one's relationship with their body and build confidence in one's ability to self sooth. Research conducted by Seoane (2016) indicates that humans use self-touch in stressful social situations in effort to regulate the increased tension they are experiencing. The common stress induced self-touch patterns are rubbing one's neck, face or head. It is thought that creating contact with the head is an "effort to relieve sensations caused by the chemical changes along neural pathways in

those areas" (p. 31). Seoane (2016) suggests that people experience a variety of self-touch techniques such as massaging the hand and neck or rubbing one's hard to evaluate which techniques feels the most calming. Another body based coping skill that clients can utilize is progressive muscle relaxation. Progressive muscle relaxation involves tensing each muscle in the body and then allowing it to relax, starting at head and working your way down the feet. Progressive muscle relaxation provides a sense of calm to the body in its entirety by modulating the central nervous system.

Discussion

In the last decade, there has been a surge of research focused on how to most effectively treat children who have experienced trauma. It is now known that experiencing trauma can cause structure-altering changes in the brain such as a significant decrease in amygdala and hippocampal volumes (Karl et al., 2006 & Bremner, 2006). The functionality of the brain is also subject to change after experiencing trauma. Research by Bremner (2006), Schaefer et al. (2006), Weniger et al. (2008) & Van Der Kolk (2014) have confirmed that experiencing trauma can lead to a decrease in prefrontal cortex activity and proficiency, which causes difficultly in thinking clearly and completing tasks for everyday life. Experiencing trauma has also been correlated with amplified limbic system functioning, causing an abundance of stress hormones, specially norepinephrine and cortisol, to be secreted into the body on a daily basis, which is causes physical, emotional and mental taxation (Bremner, 2006).

The research of Bremner (2006), Bellis et al. (2010), Koenigs & Grafman (2009), Schaefer et al. (2006), Weniger et al. (2008) & Van Der Kolk (2014) clearly demonstrate that trauma has a significant effect on the endocrine system; the body maintains heightened stress response indefinitely. Therefore, it does make sense to address the biological underpinnings of

trauma symptomology to stop the damaging effects of the steady secretion of stress hormones into the system, which causes cognitive impairments and emotional dysregulation. Bottom up approaches that focus on one's body appear to be an effective way to regulate the central nervous system to interrupt the "trauma cycle".

Though dance/movement therapy can offer the physical regulation, emotional expression and self exploration, clients may also benefit from top down therapeutic interventions. As the research of Dorsey et al., (2017) has indicated, cognitive behavioral therapy has been proven to be an effective intervention for trauma affected populations. It seems that it would be fitting to utilize bottom up interventions at the beginning sessions and introduce more top down methods when bodily regulation is achieved. If or when bodily sensations are not a primary symptom, it could still be helpful to start sessions with a body based techniques to ground the client in the present before starting cognitive introspection. The method of combining bottom up and top down methods is a holistic approach that appears to utilize the efficacious aspects of each type of intervention. Further research focused on the efficacy of combining bottom up and top down interventions for trauma affected populations will be needed to further support this claim. Research regarding specific combinations of bottom up and top down approaches, such as dance/movement therapy and cognitive behavioral therapy, would be useful to broaden the scope of knowledge surrounding treatment collaborations.

Along with establishing a healthy endocrine baseline, the integration of the mind and body in trauma treatment can offer an opportunity for children to notice sensations in their body that are correlated with emotions. The opportunity to recognize how emotions manifest in the body is vital for children as it create emotional awareness, which is the first step in developing self-regulation. The identification of emotions in the body can also serve as a bridge from

dance/movement therapy to CBT for trauma-affected children. In order to learn how to regulate the self, it is beneficial to experience moments of chaos followed by moments of containment (Kestenberg & Sossin, 1979). This pattern can be experience in a series of movement sequence games in which participants are told to start and stop by one another. The experience of being told to "stop" and having that statement be honored by group members can also help build trust within a group. This type of exercise employs cognition, executive functioning, visual spatial/motor, memory and emotional/behavioral functioning, which Bellis et al., (2010) noted the activation of such may alleviate symptoms of PTSD in children.

While children can benefit from the recognition and expression of their emotions, more mature clients may seek to gain a greater understanding of their experience or to learn concrete techniques to regulate or self sooth. For a client who is looking to focus on self exploration, a movement experiential such as improvisation or mirroring could be beneficial. A client who would like to learn body based coping skills for regulation could benefit from learning self massage techniques or being lead through a progressive muscle relaxation.

In all the interventions that have been examined for this review, the first element of the all interventions was to establish safety within the group. Establishing safety in the group is needed for all age groups to bring cohesively to the group and to identify expectations. While safety was fostered in a variety of different ways based on the groups, a general way to ensure is have a group to create "group rules" together upon their first meeting. Safety can be reestablished through ritual by reviewing the rules each time the group meets. Participants may also feel safe by learning about the members in the group. Conducting a warm up activity that involves sharing a small piece of identifying information about what they like, such as their favorite color, can help group members learn about each other in a non-threatening way. As

sessions progress, groups member can share a “news flash” in 1 minute to describe the events on their week, or a “weather forecast” to describe their mood in terms of weather (sunny but slightly cloudy).

Conclusion

As mentioned in the beginning of this review, the number of trauma-affected children is on the rise and continually increases (SAMHSA, 2012). It is now known that trauma significantly alters a person’s biological state of being and has significant impact on cognition, memory, visual motor coordination, emotional regulation, stress response and the concentration of stress hormones in the body (Bremner, 2006, Bellis et al., 2010, Koenigs & Grafman, 2009, Schaefer et al., 2006, & Weniger et al., 2008). It is also now known that the biological and neurological effects of trauma are significant for children than for adults (Van Der Kolk, 2014). Throughout this review, I have outlined several studies that suggest that integrating the mind and body in trauma treatment can be a supportive technique to decrease trauma response symptoms. The techniques that have been reviewed in this literature review have been primarily dance/movement therapy techniques. Research by Harris (2007) and Dorsey et al. (2017) suggests that the physical nature of dance/movement therapy can provide an expressive outlet for children to release physical tensions held within the body. The empathic nature of the therapeutic relationship in dance/movement fostered in exercises such as mirroring enables a child to develop a positive relationship with their body and learn about their relations to others. Body based technique such as the body scan offers children the opportunity to notice sensations in their body that are correlated with emotions which will in turn foster an understanding of their experience. Lastly, dance/movement therapy can help a child explore how to physically self-sooth themselves to promote emotional regulation through imploring body based coping skills.

Integrating the mind and body in trauma treatment can offer an opportunity for children to notice sensations in their body that are correlated with emotions, gain an understanding of their experience and find ways to self sooth. Though bottom up methods offer tremendous benefits for children who have experienced trauma, they can work even more effectively in conjunction with top down approaches such as cognitive behavioral therapy. For the data analyzed in this review, it appears that the combination of bottom up and top down approaches is beneficial, particularly when bottom up interventions are conducted first.

Bottom up interventions that integrate the mind and body such as dance/movement therapy have not been considered as viable therapeutic interventions due to the lack of research. The lack of research on body based therapeutic interventions is a limitation for this literature review. The limited amount of dance/movement therapy studies provide a small sample size to draw conclusions from. The qualitative data of the studies and subjective narrative make it difficult to discern the efficacy of DMT on reducing trauma symptomology.

Specific therapeutic techniques that can be used in group or individual therapy have been analyzed and outlined in this review. However, independent coping skills that clients can do on their own has not been addressed. Further research regarding the usefulness and the way in which children utilize body based coping skills on their own would be beneficial. Also, future research focused on the neurological underpinnings of movements, postures and breathing patterns would better inform the types of body based coping skills that are taught to children.

Since the data on DMT interventions for trauma is focused on a specific group that had been ran with a small group of individuals, there is an inadequate amount of data to determine the cross cultural implications of the interventions described. The vignettes of Rainbow Tin Hung Ho (2015) and Harris (2007) provided in depth data on two specific cultural groups who

have experience a particular trauma. Therefore, what is known is how the intervention has worked for that very narrow population thus the transferability to other populations is unknown. Further research on dance/movement therapy with trauma exposed populations is an over aching recommendation. Research focused on specific dance/movement therapy interventions with a trauma affected population would be useful as well as the experience of conducting DMT interventions with a variety of populations.

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